

# The Construct Validation of Learning Organization and its Influence upon Firm Performance in Mainland China

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*This paper examines the applicability of the learning organization concept and its influence upon firm performance in mainland China. Based on the theoretical framework proposed by Watkins and Marsick, four dimensions of the learning organization instead of seven dimensions were identified. A balanced scorecard-based performance evaluation questionnaire was developed. Regression analyses were used to examine the relationship between learning organization and firm performance. The results indicate that learning organization has positive influence on firm performance.*

Keywords: Learning Organization, Firm Performance, Balanced Scorecard

The concept of learning organization has received increasing attention in the field of organizational studies (Yang, Watkins & Marsick, 2004). It is no exception in China, too. Since entering into WTO, huge challenges face Chinese organizations both in private and public sectors. In recent seven to eight years Chinese organizations have been actively seeking the way to building learning organizations with Chinese characteristics. However the concept and the theoretical framework about the learning organization were originally proposed by western academia. The political and cultural contexts of western countries are different than those of Chinese. Whether the concept of learning organization shares the same understandings under two different systems? The theoretical and empirical studies so far have not yet answered the above question thoroughly. This study is to (a) examine the applicability of *Dimensions of Learning Organization Questionnaire (DLOQ)* proposed by Watkins and Marsick (1993, 1996, 1997) in Chinese context, and (b) investigate whether the efforts of building learning organization can bring about the improvement of firm performance.

## Literature Review and Theoretical Framework

### *The Learning Organization*

Senge's (1990) *The Fifth Discipline* was translated into Chinese and made the concept of learning organization known to everybody soon. Senge (1990) identified the five disciplines of a learning organization, namely, building shared vision, personal mastery, improving mental models, team learning and system thinking. Garvin (1993) criticized that Senge's five disciplines were too abstract. He proposed that learning organizations were skilled at five main activities: systematic problem solving, experimentation with new approaches, learning from their own experience and past history, learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organization. Watkins and Marsick (1993) described seven dimensions of a learning organization as follows: create continuous learning opportunities (Continuous Learning), promote inquiry and dialogue (Dialogue and Inquiry), encourage collaboration and team learning (Team Learning), empower people toward a collective vision (Empowerment), establish systems to capture and share learning (Embedded System), connect the organization to its environment (System Connection), and provide strategic leadership for learning (Strategic Leadership). Seven dimensions covered three levels of learning, namely, individual, group/team, and organizational. Örtenblad (2002) summarized four understandings of the concept of the learning organization: (1) old organizational learning perspective, (2) learning at work perspective, (3) learning climate perspective, and (4) learning structure perspective. Watkins and Marsick's seven-dimension model was considered so far the most comprehensive theoretical framework containing the above four understandings.

Watkins and Marsick in 1997 developed a scale *Dimensions of Learning Organization Questionnaire (DLOQ)* assessing the extent of a learning organization based on seven dimensions. Since then, a number of empirical studies conducted by Lien, Yang and Li (2002), Ellinger, Ellinger, Yang and Howton (2003), Yang, Watkins and Marsick (2004) had proved that DLOQ was a valid and reliable assessment tool. In mainland China, Zhang, Zhang and Yang (2004) conducted an empirical study of DLOQ in Chinese state-owned enterprises (SOE). The result showed that the seven-dimension model was applicable to the Chinese context. However, mainland China has great variety of

organization forms. Whether seven-dimension is applicable to other varieties except SOEs? More variety of organizations including private-owned enterprises, government agencies, non-profit organizations, multinational corporations need to be investigated for the applicability of the seven-dimension model.

#### *The Balanced Scorecard (BSC)*

Firm performance was traditionally only evaluated by financial indicators especially in the industrial era, but the financial indicators could not reveal the human side of business such as the actual competencies that both employees and the firm had (Kaplan & Norton, 1992). Kaplan & Norton devised a Balanced Scorecard (BSC) - a set of performance indicators that provide managers a fast but comprehensive view of firm business. BSC includes both financial and non-financial indicators that can help keep track of an organization's key success factors. BSC involves four important perspectives: financial goals, customer perspective, internal processes and learning and growth (or innovation). There is a causal chain among the four perspectives.

Ellinger et al. (2002) proved the positive association between *DLOQ* and both perceptual and objective measures of firms' financial performance. Yang, Watkins and Marsick (2004) assessed the positive relationship between *DLOQ* and perceived financial and knowledge performance. Perceived financial and knowledge performance in fact could not cover all the important perspectives of firm performance. Ellinger et al. (2002) and Yang et al. (2004) suggested that future research should further investigate by integrating a wider variety of financial and non-financial indicators. A questionnaire needs to be developed to reflect overall evaluative indicators of firm performance. In this study, a perceived balanced scorecard-based performance evaluation questionnaire would be developed to examine the relationship between firm performance and *DLOQ*.

### **Research Questions**

As a step toward gaining a better understanding of learning organization construct in mainland China, this study was designed to determine the applicability of the *DLOQ*, and to identify its influence on firm performance. Three research questions guided the study:

1. Are dimensions of *DLOQ* (in Chinese version) applicable to Chinese context?
2. Can a valid and reliable measure of a perceived balanced scorecard-based performance evaluation questionnaire be developed to reflect the firm performance?
3. What is the relationship between learning organizations and firm performances in the Chinese context?

### **Methodology**

#### *Instrumentation*

*DLOQ as a measuring tool of learning organizations.* The first research question is to test the applicability of *DLOQ* in mainland China, so a 21-item *DLOQ* in Chinese version was used to collect data. Each dimension is measured by three items on a six-point Likert Scale (1=almost never to 6=almost always). A sample item is "In my organization, people help each other learn." Respondents were asked to evaluate the extent to which the construction of learning organization had already been reached in their own organizations.

*Firm performance evaluation questionnaire.* The second research question is to develop a balanced scorecard-based firm performance evaluation questionnaire, so many performance indicators practically applied in the Chinese Enterprise context were included (e.g. after-sales service quality, debt-to-asset ratio). Twenty-four performance indicators were classified into four perspectives of financial, customer, internal processes, and learning and growth. A pilot test was carried out to test the reliability of the instrument. Fifty-three middle-level managers who participated in a management training seminar were surveyed. The item-to-total correlations for performance items of each sub-scale were computed. Of the 24 items, 22 had item-to-total correlations above .40, the highest being .78. Two items were deleted, which had correlations lower than .35 cut of value (Nunnally, 1978). Reliability coefficient estimates (Cronbach's Alpha) of four sub-scales were .84, .88, .83, and .82 respectively. The results suggested that most of the items contributed to internal consistency. The 22-item firm performance evaluation questionnaire was identified. Each dimension is measured by five to six items. A sample item is "In my organization, the after-sales service quality is greater than last year." Respondents were asked to indicate their assessments of the firm's current performance when compared to the previous year. Six-point Likert scale that ranged from "1=almost never" to "6=almost always" was used.

#### *Sample*

A convenience sample was used for this study due to the complexity and difficulty of data collection. A total of 460 subjects from 92 companies were surveyed. A total of 277 questionnaires (60.22% response rate) were considered valid. Their jobs taken are various from general management (14 percent), operations/production (16

percent), administration, logistics, financial/accounting (26 percent), human resource (12 percent), marketing/sales (18 percent), to technical/R&D (14 percent). Their positions in the organization are senior management (9 percent), middle management (36 percent), supervisory (36 percent), and non-management technical/professional (19 percent). Forty-one percent of the subjects worked in state-owned enterprises, 28 percent in private-own enterprises, 21 percent in joint-venture companies, only one percent in government or public sector, and 9 percent in others.

#### Data Analysis

To assess the psychometric properties of the DLOQ and firm performance evaluation questionnaire in the Chinese context, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were applied to test the construct validity. Construct validity refers to the extent to which a scale developer can ensure exactly what the instrument is measuring (Crocker & Algina, 1986). We randomly split the whole sample into two roughly equal parts. The first half contained 138 subjects and an EFA was conducted with SPSS 11.5 program, the second half had 139 subjects and a CFA was conducted with LISREL 8.7 program.

Regression analyses were conducted to assess the relationship between dimensions of learning organization and firm performance by means of SPSS 11.5.

## Results

### Factor Structure of Learning Organization and Firm Performance

EFA was used to discover the factor structure of learning organization and firm performance respectively. Factors were extracted with a principal components method with a Promax rotation. Promax rotation is an oblique rotation method which allows correlations among extracted factors. Fabrigar et al. (1999) recommend this widely used method because it often produced satisfactory solutions. The “eigenvalues greater than one” were extracted, and a minimum factor loading of .40 was required for an item to be interpreted as part of a factor. The results showed: (1) 4 factors of learning organization were identified, which explained 64.62% of the variance of the items, and (2) 4 factors of firm performance were identified, which explained 72.11% of the variance of the items. These two models were served as hypothesis models of this study.

Based on the results of EFA for sample 1, a CFA was utilized for sample 2. CFA was used to verify the adequacy of the items to factor associations and the number of dimensions underlying the construct. Null model and one-factor model were selected to compare with two hypothesis models mentioned above. Table 1 reports the CFA results of both learning organization and firm performance. Seven fit indices were selected, including chi-square ( $\chi^2$ ) test, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), non-normed fit index (NNFI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and root mean square residual (RMSR). Values of .90 or above on GFI, AGFI, NNFI and CFI indicate adequate model-data fit (Yang, 2005). RMSR values less than .06 represent an adequate fit (Yang, 2005). RMSEA values less than .08 reflect reasonably good fitting models (Browne & Cudeck, 1993).

Table 1. Fit Indices for Measurement Models of Learning Organization and Firm performance

Fit Index	Measurement of Learning Organization Construct			Measurement of Firm performance Construct		
	Null Model	One-Factor	Four-Factor	Null Model	One-Factor	Four-Factor
$\chi^2$	6034.74	563.61	220.40	4593.68	653.91	134.06
df	153	135	129	105	90	84
$\chi^2/df$	39.44	4.17	1.71	43.75	7.27	1.60
GFI	.19	.72	.90	.21	.64	.89
AGFI	.10	.64	.83	.09	.53	.84
NNFI	.68	.93	.98	.59	.86	.98
CFI	.54	.94	.98	.59	.88	.98
RMSEA	.49	.14	.08	.49	.09	.05
RMSR	.47	.07	.06	.52	.20	.06

As expected, the fit indices for the null model of both two measurements were consistently poor, and neither did one-factor models. The results indicated both of the four-factor learning organization model and the four-factor firm performance model fitted the data reasonable well. About ninety percent of covariance of measurement items was explained respectively (GFI=.90 and GFI=.89). Both RMSEA and RMSR were relatively low, suggesting small average residuals between proposed model and obtained data.

The four factors of learning organization were labeled as follow:

*Factor 1 Support learning for building shared vision:* To build the shared vision, learning systems of all levels are created and improved so that employees can be encouraged to learn on the job.

*Factor 2 Create communication and innovation mechanism:* Open and frank learning climate is created to encourage communication and innovation, and support risk and experiment.

*Factor 3 Encourage collaboration and team learning:* Based on mutual trust, self-management teams are created and expected to learn together and work together.

*Factor 4 Advocate system thinking and strategic leadership:* The leader of the learning organization can form a global perspective, and help employees think about the organizational problem holistically. The leader can seek the new development direction of the organization through continuous learning.

The four factors of firm performance were labeled as follow:

*Factor 1 Market and customer:* Enterprises focus on market and customers from the following perspectives: retention of clients, development of new clients, products' market share, and so on.

*Factor 2 Internal operation:* Internal process can operate, and complete the core tasks efficiently.

*Factor 3 Learning and growth:* Enterprises invest in learning and innovation. Employees have willingness to participate in the various activities of enterprise.

*Factor 4 Financial performance:* To provide a overview of a business's operations, a series of financial indexes are used to measure, such as return on investment and debt-to-asset ratio.

#### Reliability and Validity Estimates

Table 2 represents the reliability and inter-correlations among the dimensions. The reliability was estimate by using Cronbach's Alpha on the whole sample. All of the correlations are positive and significant at  $p < .01$  level, ranging from .35 to .71. This result indicates reasonable convergent validity for both of the proposed learning organization construct and firm performance construct. Only the last dimension (*encourage collaboration and team learning*) of learning organization had reliability coefficient estimates below .70. Because the coefficient alpha represents the lower bounder of the reliability estimates (Bollen, 1989), so two instruments were found to be reliable. Meanwhile, efforts need to be made to enhance the internal consistency for the dimension with relatively low reliability estimate.

Table 2. Means, Standard Deviations, Reliability and Inter-correlations among Dimensions

Variables <sup>a</sup>	M	SD	1	2	3	4	5	6	7	8
1. Support learning for building shared vision	3.62	1.02	(.82)							
2. Create communication and innovation mechanism	3.60	.95	.68	(.82)						
3. Encourage collaboration and team learning	3.70	1.33	.58	.61	(.62)					
4. Advocate system thinking and strategic leadership	4.12	1.15	.67	.71	.54	(.85)				
5. Market and customers	4.30	1.05	.53	.47	.39	.58	(.86)			
6. Internal operation	4.14	.94	.52	.48	.35	.57	.60	(.87)		
7. Learning and growth	3.92	1.38	.59	.55	.40	.58	.56	.62	(.78)	
8. Financial performance	4.02	1.06	.53	.50	.39	.56	.63	.65	.60	(.86)

Note: Sample size=277 for all analyses, two-tailed test, all of the correlation coefficients are significant at the level of  $p < .01$ , internal consistency estimates (Cronbach's Alpha) are presented in the diagonal.

#### Regression Analyses

Regression analyses were performed with four performance dimensions as dependent variables (see Table 3). In these analyses, stepwise method was conducted. Stepwise method is a combination of forward method and backward method. The results show that *advocate system thinking and strategic leadership* and *support learning for building shared vision* play important roles in predicting all of the firm performance dimensions. *Create communication and innovation mechanism* is also a significant predictor for learning and growth. Whereas, *encourage collaboration and team learning* has no significant effect on any dimensions of firm performance.

Table 3. The Relationship between Learning Organization and Firm performance

Dependent variable	Adjusted R-square	Predictor	Standardized Beta	T
Market and customers	.36	Advocate system thinking and strategic leadership	.40	6.16(**)
		Support learning for building shared vision	.26	4.08(**)
Internal operation	.35	Advocate system thinking and strategic leadership	.40	6.19(**)
		Support learning for building shared vision	.25	3.75(**)
Learning and growth	.41	Advocate system thinking and strategic leadership	.32	4.71(**)
		Support learning for building shared vision	.26	3.68(**)
		Create communication and innovation mechanism	.15	2.08(**)
Financial performance	.36	Support learning for building shared vision	.38	5.81(**)
		Advocate system thinking and strategic leadership	.28	4.25(**)

\*\*  $p < .01$

## Conclusions and Recommendations

This study explores the applicability of the learning organization concept in the Chinese context. Using the 277 subjects and the DLOQ as an assessment instrument, we found that the seven-factor learning organization construct proposed by Watkins and Marsick (1993 & 1997) was integrated into a four-factor construct in mainland China. In western enterprises, the management system is relatively consummate and the organizational structure diversifies a lot. These facts lay a foundation for building learning organization. However, because of the great differences in the cultural background and the enterprises' current status, the studies of western scholars cannot completely suit the characteristics and the development tendency of Chinese organizations. In China, modern management system remains to be improved and many managerial problems have emerged. On the one hand, many organizations, especially government sections still maintain a linear organizational structure, and the way of communication level by level weakens effectiveness and accuracy of information transfer. On the other hand, long-time planned economy and the traditional ideology of getting an equal share regardless of the work did block the thinking pattern of the organization's management teams and the members in the organization. Under this condition, the characteristics of the learning organization in Chinese organizations have just emerged, tending to be very abstract and extensive. In the future, Chinese organizations need to build a learning organization from conceptual and extensive practical model to the concrete and operable direction of the action.

A balanced scorecard-based firm performance evaluation questionnaire was developed. The pilot study and large sample survey show the evidences of reliability and validity for the scale measuring dimensions of the firm performance. Comparing to financial and knowledge performance, measuring firm performance from *market and customer, internal operation, learning and growth, and financial performance* perspectives is more comprehensive.

The relationship between learning organization and firm performance were identified. The results show that *support learning for building the shared vision and advocate system thinking and strategic leadership* play the important role in improving the firm performance. The enterprises should pay full attention to the work of these two areas. *Create communication and innovation mechanism* has positive influence on the performance of learning and growth. According to the causal chain theory of BSC, learning and growth can in turn promote the growth of internal processes, customer satisfaction and financial returns. *Create communication and innovation mechanism* can have a direct impact on learning and growth, and also have an indirect impact on the other three dimensions of performance. *Encourage collaboration and team learning* has no significant effect on any dimensions of firm performance. The reason may be there is no genuine sense of the team in the Chinese enterprises. In many enterprises, the hierarchy of power is relatively heavy, and the official-standard ideology still exists. Even if there are varied teams, it is difficult to achieve real empowerment and realize open and frank communication. Therefore teams are virtually difficult to achieve the level of self-management team that learning organization requires. The role of teams in improving the firm performance doesn't be reflected.

One major limitation of this study was due to the convenience sampling method. The further studies will collect the data from different regions to obtain the complicated nature of learning organization in the Chinese context, and compare the characteristics of learning organization of China with that of western countries further.

## Contribution to New Knowledge in HRD

The results of this study contribute to the growing literatures on learning organization by providing the empirical evidence of its construct validity in the Chinese context, and demonstrating the relationship between learning organization and firm performance. Our work has meaningful implications for HRD research and practice, particularly for the on-going enterprise reform efforts in mainland China. Building learning organization in China should base on four aspects proposed by this study. In addition, greater understanding is gained regarding what factors of firm performance are directly or indirectly affected by dimensions of learning organization. Research such as that described in this study can provide the path for HRD professionals to focus the learning organization's role in organizational development.

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